Smoking during radiation therapy for head and neck cancers linked to poorer outcomes

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Smokers who don't quit before radiation therapy for throat, mouth and other head and neck cancers fair significantly worse than those who do, research from the UC Davis Cancer Center has found.

Allen Chen, an assistant professor in the Department of Radiation Oncology at the UC Davis Cancer Center, found that head- and neck-cancer patients who continue to smoke during radiation therapy have poorer 5-year overall survival and higher rates of disease recurrence than those who quit smoking prior to treatment.

The study, published online recently in the *International Journal of Radiation Oncology, Biology and Physics,* should help oncologists counsel patients about the benefits of quitting smoking after a diagnosis of head and neck cancer, said Chen, lead author of the study.

"I always tell patients, 'You should really stop smoking,' but I had no tangible evidence to use to convince them that they would be worse off if they continued to smoke," Chen said. "I wanted concrete data to see if smoking was detrimental in terms of curability, overall survival and tolerability of treatment. We showed continued tobacco smoking contributed to negative outcomes with regard to all of those."

Chen and colleagues reviewed medical records of 101 patients with newly diagnosed squamous cell carcinoma of the head and neck who continued to smoke during radiation therapy, and matched those patients to others who had quit prior to starting radiation therapy for their head

and neck cancers. Matching was based on primary disease site, gender, smoking history, stage of disease, other treatment (surgery and chemotherapy) and date of initiation of radiation therapy.

The researchers found that 55 percent of patients who had quit smoking prior to treatment were still alive five years later, compared with 23 percent of those who continued to smoke. The poorer outcomes for persistent smokers were reported for both patients who had surgery prior to radiation therapy and patients who had radiation therapy alone.

Similarly, Chen and his colleagues found that 53 of the patients who still smoked experienced disease recurrence, compared to 40 patients in the control group. Active smokers also experienced more complications of radiation therapy, such as scar tissue development, hoarseness and difficulties with food intake, than their counterparts who had quit prior to starting therapy.

The incidence of secondary cancers following radiation therapy was not significantly different between the two study groups.

"A diagnosis of cancer is emotionally devastating, and a lot of patients are reluctant to entertain the idea of smoking cessation. Many patients can't or won't connect the dots, and, unfortunately, our data shows that by continuing to smoke, they are more likely to gamble away the possibility of cure."

Chen said additional research will be needed to explain these differences in outcomes for patients with head and neck cancers. One theory suggests that smoking deprives the body of much-needed oxygen. "Radiation therapy requires oxygenation for the production of free radicals, which attack cancer cells," he said.

Chen emphasized that his findings are based on an observational study,

which does not establish a cause-effect relationship between smoking during radiation therapy and poorer outcomes. Researchers were unable to determine with certainty the actual cause of death of each patient, and active smokers may be at higher risk of death from other medical problems such as heart disease, stroke and diabetes.

"In addition, patients unable to quit may also have non-cancer-related medical and psychosocial problems that could possibly contribute to inferior survival," Chen said. "Those who continue to smoke even after a diagnosis of head and neck cancer are likely to be at higher risk for alcohol abuse, have less social support and have lifestyles associated with high-risk health behaviors."

Chen stressed that the findings still are instructive for clinicians.

"Regardless of the underlying reasons, our finding should provide both clinicians and patients alike with compelling evidence supporting the role of smoking cessation in this setting" he concluded. "Counseling these patients on its importance, both here at UC Davis and in the community, is a must."

Provided by University of California - Davis - Health System

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